

Collection and Shipping of Specimens for Measles Virus Isolation

Specimens for virus isolation should be obtained as soon as possible when measles infection is suspected, preferably at the onset of rash when the serum sample is collected. Urine and respiratory samples are both good clinical specimens for viral isolation. With very young patients, a respiratory sample (throat swab) may be easier to obtain than urine. Other types of respiratory samples may be more readily obtained in a clinic or hospital where the equipment is available and it is recommended to take advantage of the opportunity. Protocols are described below.

A. Respiratory specimens

Materials:

- Sterile swabs
- Sterile saline
- 3-ml aliquots of viral transport medium (VTM; sterile PBS or suitable isotonic solution such as HBSS, containing antibiotics: 100 units/ml penicillin, 100 µg/ml streptomycin) and either 2% fetal bovine serum or 0.5% gelatin in 15 ml polycarbonate or polystyrene centrifuge tubes
- 5-ml plastic syringes
- Plastic aspirators or 30-ml syringe
- Cryovials
- Styrofoam shipping containers

Instructions:

Attempt to obtain the sample as soon as possible after onset of rash. Virus is most frequently recovered within the first 3 days following rash (but up to 7 days after rash onset is acceptable).

A nasal wash (nasopharyngeal aspirate) can be obtained by using a syringe attached to a small piece of plastic tubing. After placing about 3-5 ml of saline in the nose, aspirate as much of the material as possible and add to the centrifuge tube containing the VTM. (In a clinic or hospital setting, if available, a vacuum may increase the recovery of fluid.) Rinse the syringe and collection tubing into the VTM.

Alternatively, sterile swabs can be used to obtain throat and nasopharyngeal specimens. A throat swab is taken by rubbing the posterior nasal passages with a dry sterile cotton swab. Place swab in a tube containing 2-3 ml of VTM. The swab can be broken off into the tube of VTM.

Place respiratory specimens at 4°C and ship to an appropriate laboratory with cold packs. Refrigeration of samples is adequate if cold shipment can be arranged within about 48 hours. If there is a delay, and it is possible, freeze the samples at -40° to -70°C and ship frozen on dry ice.

B. Urine specimens

Materials:

- Urine collection cups, preferably with lid.
- 50-ml polystyrene screw-cap centrifuge tubes.
- PBS or DMEM
- Cryovials
- Shipping containers

Instructions:

Urine should be collected within 7 days of rash onset (within 1-3 days if possible). First-morning voided specimens are ideal, but any urine collection is adequate. Collect 10-50 ml of urine in a urine specimen container.

Centrifuge the urine specimen as soon as possible after collection. After collection, keep the specimen cold (refrigerator or wet ice). Transfer the urine specimen to a 50-ml plastic conical centrifuge tube and centrifuge at 400 x g for 5-10 minutes at 4°C to collect the sediment.

Resuspend the sediment in 2-3 ml of VTM (above) or any cell culture medium (DMEM, EMEM, RPMI plus antibiotics). Preferably, specimens that have been centrifuged and resuspended should be frozen at -70°C and shipped on dry ice. If dry ice is not available, however, they can be stored at 4°C and shipped on wet ice or cold packs.

If centrifugation is not available, do not freeze the urine sample. The entire urine specimen should be stored at 4°C, and shipped to the lab on wet ice. It is best to have the specimen shipped to a viral laboratory within 48 hours so that it can be processed and frozen at -70°C for optimal virus recovery. Seal the specimen container tightly to prevent leakage.

C. Blood samples

Virus can also be isolated from lymphocytes. If it is possible to collect several milliliters of heparinized blood, the lymphocytes will be a good source of virus. The whole blood should be stored at 4°C and transported to the laboratory within 48 hours of collection.

D. Shipping of clinical specimens and viral isolates

It is recommended to use containers made specifically for shipping infectious substances, for example, the Saf-T-Pak system.

For shipping of viral isolates in cell culture, it is best to use a plastic 25-cm² tissue culture flask. Cells should be infected 1-2 days before shipping. Before shipment, fill the vessel to the top with DMEM (plus antibiotics and 2% FBS). Screw the top on tightly and seal with plastic film or tape. Place the flask in a leak-proof container, such as a zip-lock plastic bag with absorbent material, and ship at room temperature.

Infected cells can be pelleted, resuspended in a small volume of DMEM, and frozen at -70°C before shipping on dry ice.

E. Shipping information

CDC is a designated WHO measles strain bank and will accept viral isolates or clinical specimens from cases of measles for genetic characterization.

It is important to notify the Measles Virus Section before shipping, particularly for international shipments.

Tel: 404-639-1156 -3512
FAX: 404-639-4187
E-mail: jrota@cdc.gov

Specific instructions for shipping will be provided. Viral isolates and clinical specimens arriving from outside of the USA will require a CDC import permit, available upon request (a faxed copy is acceptable).

For international shipments, a copy of the import permit must accompany the shipping documents. A copy of the label must be affixed to the outer shipping container.

Please call, fax or e-mail to obtain a valid permit and shipping label if the date has expired or if the permit has been lost.

Ship to:

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